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ABSTRACT

As a followup to "Standards Mean Business," the National Alliance of Business publication prepared for the 1996 National Education Summit, this publication highlights some of the many ways in which business leaders are working with educators and community leaders to bridge the gap between school and work and to support high academic standards. The link between academic skills and workplace skill requirements, the consequences of the current lack of connection between the business and education communities, and how businesses are becoming active in linking academic knowledge and workplace skill requirements are explored. A number of programs are described to give business leaders ideas they can use in their own communities. In addition, "Bridging the Gap" calls in business leaders to: (1) support high academic standards, assessment measures, and systems of accountability; (2) articulate workplace skills; (3) use student achievement in hiring and location decisions; (4) expose teachers, students, and parents to the world of work; and (5) adopt policies to support employee and family involvement in community schools. By collaborating with educators to develop a common language, business leaders take the first step toward promoting the high academic standards that are vital for academic excellence and economic competitiveness. (Author/SLD)

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Bridging The Gap

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STANDARDS MEAN BUSINESS

This booklet is part of the **Standards Mean Business** Leadership Kit; developed by the Business Coalition for Education Reform (BCER). This kit includes several tools to help business leaders engage their communities in conversations about the importance of all students achieving high academic standards. For more information about the Standards Mean Business Leadership Kit, contact the BCER at the National Alliance of Business by calling 800/787-2848.

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Bridging The Gap

Initiatives Linking Education and the Workplace

by Karen Larson

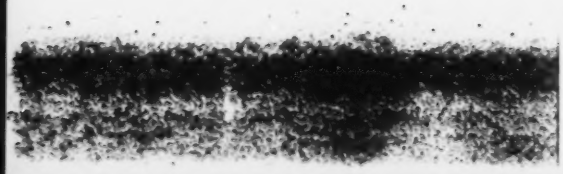

Table of Contents

Executive Summary ii

I. The Current Disconnect Between School and Work 1
II. Engaging Students in Their Futures 3
III. Finding the Co.nmon Ground – What Have We Achieved? 4
- America's Choice: High Skills or Low Wages! 4
- SCANS Skills 5
- EQW National Employer Survey 6
- CED's American Workers and Economic Change 6

IV. Using Standards to Connect School and Work 7
- Academic Standards 7
  - Colorado's Geography Standard 8
  - Maryland's Skills for Success 8
  - Virginia Standard, Writing/English 9
- Industry Skill Standards 10
  - Automobile Technician 10
  - Hazardous Materials Management Technician 10
  - Textiles Worker 11
- Skill Standards Projects 11
  - National Voluntary Projects 11
  - Massachusetts School-to-Work Initiative 12
  - Skill Standards in Connecticut 14
  - Illinois Occupational Skill Standards and Credentialing Council . . . 15

V. Other Efforts to Bridge the Gap 17
- O*NET 17
- V-TECS 18
- The VITAL LINK 19
- Worklink 20
- Work Keys® 21
- MegaSkills® 23
- The Certificate of Initial Mastery (CIM) 23

VI. Moving Forward - The Business Role 25

Appendix 1: National Voluntary Academic Standards Developers 27

Appendix 2: National Voluntary Industry Skill Standards Projects 29

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Bridging The Gap

Executive Summary

> "It's time to stop pretending that education and commerce exist on different planets. The quality revolution that has swept through businesses worldwide is now poised at the schoolhouse door, demanding greater knowledge and skill from the students inside. Meeting this challenge is the key to their future — and to the future economic security of our country." — *Standards Mean Business*

Advanced technology, the globalization of the marketplace, and the spread of "high-performance" workplaces present business with the opportunity to reach unprecedented levels of excellence. In this new environment, employees that possess strong personal and academic skills that can be applied in the workplace are a company's most valuable asset. Integral to creating a competitive workforce is ensuring that all students are able to connect the knowledge they learn in school with the skills they will need on the job. All students must now meet high academic standards, previously expected of college-bound students.

Standards Mean Business, the National Alliance of Business publication prepared for the 1996 National Education Summit, describes the crucial leadership role that business must play in supporting high academic standards for all students. Business leaders must work with schools to ensure that academic standards reflect the skills and knowledge required to succeed in today's workplace. Yet the business and education communities often speak very different languages, making collaboration difficult. A follow-up to *Standards Mean Business*, this publication highlights some of the many ways in which business leaders are working with educators and community leaders to bridge the gap between school and work, a crucial step toward supporting high academic standards. Specifically, this publication explores the following:

1. The link between academic skills and workplace skill requirements

2. The consequences of the current disconnect between the business and education communities

3. How individual companies, communities, and state and national coalitions are active in linking academic knowledge and workplace skill requirements

Bridging the Gap does not attempt to provide a definitive solution for connecting school and work. Rather, by sharing some of the many existing efforts, this document aims to provide business leaders with ideas for facilitating communication in their own communities. *Bridging the Gap* also calls on business leaders to implement the following practices:

- Support high academic standards, assessment measures, and systems of accountability
- Articulate workplace skills
- Use student achievement in hiring and location decisions
- Expose teachers, students, and parents to the world of work
- Adopt policies to support employee and family involvement in community schools

By collaborating with educators to develop a common language, business leaders take the first step toward promoting the high academic standards that are vital to both academic excellence and economic competitiveness.

We hope the readers of this publication will contact the BCER through the National Alliance of Business at 800/787-2848 with information about promising efforts to link school and work that we might include in future publications.

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I. The Current Disconnect Between School and Work

Educators are sometimes puzzled when schools are criticized for not providing students with essential skills. By many indicators, school performance has improved over the last two decades; and yet many schools have not kept pace with the demands of a rapidly changing world. Often, educators do not have sufficient information about today's world of work. As a result, many students are graduating without the skills and knowledge they need to be successful in the workplace.

Too few formal channels of communication between business and educators exist to allow employers to express their skill requirements. Often companies themselves do not have a clear picture of the academic skills they require in new workers. It is hardly surprising that companies are having difficulty finding qualified high school graduates and graduates are having difficulty finding good jobs.

Student performance suffers as a result of this disconnect. College-bound students are more likely to know that academic achievement will weigh heavily in college admissions decisions. Non-college bound students, on the other hand, see little connection between school achievement and the quality of the job they obtain upon graduation. Experience suggests they are correct. Only about 15% of employers review recent high school graduates' transcripts during the job hiring process.[1] Clearly, most employers do not consider high school transcripts to be a reliable indicator of student achievement.

Lacking educational indicators that signal workplace readiness, employers are reluctant to hire high school graduates for challenging jobs. Workers with extensive experience land these jobs because their experience conveys competence in a way that school performance does not. The scraps that remain for high school graduates are not very appealing: low-paying jobs with little opportunity for advancement. In fact, high school graduates generally hold the same types of jobs as dropouts; the graduates simply have more success in being hired.[2]

Without incentives to study hard and achieve academic excellence, many non-college bound students simply do the minimum amount of work required to

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graduate. This has a negative effect on both the graduates and the businesses that will ultimately hire them. It is clear that all students need incentives to meet high standards and become the life-long learners that our changing economy demands.

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1. The 1994 Education for a Quality Workforce National Employer Survey (EQW-NES), University of Pennsylvania's Wharton School and Graduate School of Education.

2. Hamilton, Stephen F. "Excellence and the Transition from School to Work," *Phi Delta Kappan*, November 1986, p. 240.

[redacted]

II. Engaging Students in Their Futures

Education is about more than just preparing for earning a living. Education is about preparing young people for living their lives. The purpose of schooling is not simply to make students economically competitive, but to produce competent citizens and productive comunity members. In short, the purpose of education is to open doors to life. At the same time, the business community is convinced that many skills essential to being a productive citizen are also critical on the job. Indeed, one of life's most important doors is the one that opens onto the workplace.

In the classroom, motivating students to learn is often the key to high achievement. Students frequently fail to understand how academic learning is applied or rewarded in the real world. Identifying the links between industry skills and academic subjects can make learning exciting and motivate students to achieve. Many students, including those for whom school is difficult or boring, could be well served by learning traditional subjects (English, algebra, biology) through practical applications. High academic standards ensure that all students strive to meet the same challenging goals, though their methods of learning may differ.

Clearly defined standards of achievement not only provide students with information about what skills are necessary to be successful in a changing world, they also enable employers to use student achievement as an accurate measure of skill. As a result, the hiring process becomes easier and more reliable; students are motivated to achieve as employers are able to reward high-skilled workers with better wages; and the skill level of the workforce increases. When individuals enter the workforce equipped with essential skills and knowledge, companies are able to shift training away from remedial skills to industry-specific training, a key to increased productivity.

III. Finding the Common Ground — What Have We Achieved?

Identifying the links between the classroom and the world of work has been an evolutionary process marked by many important studies and reports. These projects, a few of which are described below, have been instrumental in informing educators, business leaders, policy makers, and concerned citizens about the need for better communication between business leaders and educators. They have also been instrumental in guiding efforts to develop a common language and a shared understanding of the skills that all students require to be successful.

America's Choice: High Skills or Low Wages!, published by the Commission on the Skills of the American Workforce in 1990, focused the nation's attention on the dangers of an insufficiently educated workforce. This influential document pointed out a painful truth: unless we increase the skills of the workforce, real wages will continue to decline and standards of living will fall. *America's Choice* advocates clear standards of achievement that motivate students to work hard by rewarding success in the workplace.

To receive a copy of America's Choice, *contact the National Center on Education and the Economy Publication Office at 716/546-7620.*

While the need for achievement standards is clear, crafting standards that are meaningful to employers, educators, and students is a challenging task. The ***SCANS Skills*** were developed by The Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) in 1991. The Commission, composed of representatives from business, labor, government, and community organizations, stressed the need to develop a learner "who can put knowledge and skills into practice as a productive worker, a responsible citizen, and a more complete human being." The SCANS Skills are centered around a two-part typology of *Foundation Skills* and *Workplace Skills* and make a solid start toward identifying the academic skills required in the high performance workplace.

Figure 1

The SCANS Skills: Workplace Know-How

The know-how identified by SCANS is made up of three foundation and five workplace skills

Three Foundation Skills: Competent workers in the high-performance workplace need

#1	**Basic Skills**	reading, writing, mathematics, speaking, and listening.
#2	**Thinking Skills**	the ability to learn, to reason, to think creatively, to make decisions, and to solve problems.
#3	**Personal Qualities**	individual responsibility, self-esteem and self-management, sociability, and integrity.

Five Workplace Skills: Effective workers demonstrate their skills in managing or using

#1	**Resources**	They know how to allocate time, money, materials, space, and staff.
#2	**Interpersonal Skills**	They can work on teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds.
#3	**Information**	They can acquire and evaluate data; organize and maintain files; interpret, communicate, and use computers to process information.
#4	**Systems**	They understand social, organizational, and technological systems; monitor and correct performance; and design or improve systems.
#5	**Technology**	They can select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

For more information about the SCANS Skills, contact Libby Queen, Office of Policy Research, U.S. Department of Labor at 202/219-7674 ext. 165.

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While most public attention has focused on the school as the locus of change, the ***1994 Education for a Quality Workforce National Employer Survey (EQW-NES)*** aims to connect academic learning and workplace skill requirements by documenting employer practices and sharing promising strategies. For example, the survey found that businesses that invest in internship programs to bring students to the workplace and employers who use grades as screening criteria have workforces with higher-than-average years of schooling and are more likely to report increased job skills. The report concludes with a key lesson: "What is required to end the disconnect between schools and employers are more direct, substantive, and business-like transactions between the two."

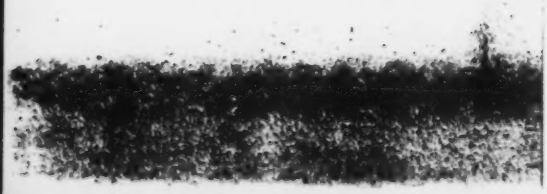
For more information about EQW's mailings and publications, contact the National Center for the Educational Quality of the Workforce at 800/437-9799.

In 1996, the Committee for Economic Development released ***American Workers and Economic Change,*** which outlines long-term strategies to help American workers and businesses adjust to the sweeping changes that are dramatically altering the nature of work. The report urges employers and policy makers to

- Invest more in the training of workers and ease adjustment to job loss
- Increase national saving and investment, streamline regulation, and maintain and expand open markets
- Broaden economic opportunity for all Americans — especially through educational reform and work-related safety-net programs
- Make changes in unemployment, retirement, health, and other policies to better serve a more flexible, mobile workforce

To order a copy of American Workers and Economic Change, *contact the Committee for Economic Development at 212/688-2063.*

These studies, along with other important works, have inspired many further efforts to connect school and work at the national, state, and local levels through the articulation of specific academic skills and workplace skill requirements. New efforts are continually building on the existing knowledge base, making an unprecedented degree of communication between schools and business possible.



IV. Using Standards to Connect School and Work

The business and education communities must come together to reinforce the message that all children need a challenging education. Both academic and industry skill standards are means to develop the common language necessary for this collaboration; these standards must reinforce one another in order to strengthen the link between school and the workplace.

Academic Standards

What should students learn in school, and how well must they learn it? The Business Roundtable's recent publication, *A Business Leader's Guide to Setting Academic Standards*, provides examples of how states and communities are answering this question. Standards are explicit statements that describe the skills and knowledge that all students must achieve and the level at which they must achieve them. Standards allow students to be recognized for achievement, rather than simply the amount of time spent in school.

Business, education, and political leaders began to call for academic standards in the early 1980's, after the landmark document *A Nation at Risk* called for core academic curriculum for all students. At the same time, the nation faced the growing realization that the skills of the workforce were insufficient to remain internationally competitive in the changing economy.

President Bush and the nation's governors, including then-Governor Bill Clinton, furthered the reform movement by creating the six National Education Goals, which supported standards-based education reform. By the early 1990's, leading scholarly and professional organizations had begun to develop national voluntary standards for their subject areas. (See Appendix 1 for a listing of groups developing national voluntary standards). The *Goals 2000: Educate America Act* provided money to states to assist in the development of state academic standards. Currently, 49 states are developing or implementing standards. At the local level, many individual school districts are developing their own standards.

Today, standards remain one of the most essential education reforms upon which many other reforms rest. The business community has been unwavering in its support for high standards for all students, exemplified most recent-

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ly at the 1996 National Education Summit. At the Summit, business leaders and the nation's governors committed themselves to providing the necessary leadership to support the development and implementation of academic standards. The business community understands that high academic standards are crucial to providing students with the skills they need to be successful and employers with the skilled workforce they need to be internationally competitive. The following excerpts demonstrate the variety of approaches and forms that standards can take.

Colorado's Geography Standard

Standard 3.1 Students know the physical processes that shape Earth's surface patterns.

Grades 9-12

As students in grades 9-12 extend their knowledge, what they know and are able to do includes

- Identifying the dynamics of the four basic components of Earth's physical systems: the atmosphere, biosphere, lithosphere, and hydrosphere;
- Explaining the interaction of Earth's physical systems (for example, the interaction of climate and ocean water as exemplified by El Niño)...

Maryland's Skills for Success

Maryland's Skills for Success focuses on what students need to know and be able to do to succeed in the workplace. These five skills will be incorporated into all academic content standards:

- Learning skills
- Thinking skills
- Communication skills
- Technology skills
- Interpersonal skills

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Goal 4 - Technology Skills

The student willl understand, apply, and evaluate technologies as labor-enhancing and problem-solving tools...

I. Expectation: The student will demonstrate knowledge of current technologies appropriate for a variety of purposes and situations.

B. Instructional Indicators

1. The student will identify and use resources and procedures for keeping abreast of advances in technology.

2. The student will identify appropriate and current technologies for accessing and managing information, communicating, performing work, and solving problems in a variety of situations.

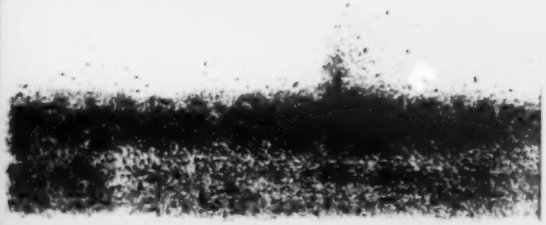
Virginia Standard, Writing/English

Fifth Grade

5.7 The student will write for a variety of purposes: to describe, to inform, to entertain, and to explain.

- Choose planning strategies for various writing purposes.
- Organize information.
- Use vocabulary effectively.
- Vary sentence structure.
- Revise writing for clarity.
- Edit final copies for grammar, capitalization, spelling, and punctuation, especially the use of possessives and quotation marks.

To order a copy of A Business Leader's Guide to Setting Academic Standards, *fax a request to Carole Kelley at 202/466-3509.*



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Industry Skill Standards

Recognizing the important connection between academic skills and successful workplace performance, many industries are beginning to define the academic skills they require in entry-level workers. Industry skill standards represent a powerful tool to link industry skill requirements and academic curriculum by identifying how specific academic skills relate to successful workplace performance.

The National Skill Standards Board (NSSB), established under the *Goals 2000: Educate America Act* of 1994, is coordinating the work of existing skill standards projects and preparing to launch future projects. Its mission is to develop a national system of voluntary skill standards that will affect all institutions concerned with work skills. Twenty-eight representatives from business, labor, human resources, education, community-based and civil rights organizations, and federal, state, and local government compose the National Skill Standards Board. The legislation charges NSSB with developing a framework for a skill standards system. NSSB will establish voluntary partnerships to develop standards and endorse skill standards for widespread use.

The following paraphrased samples of industry skill standards typify the advanced academic skills which employers increasingly demand. *(See Appendix 2 for a complete listing of national voluntary skill standards projects.)*

Automobile Technician:

- Know how fuel characteristics affect combustion.
- Use formulas such as Ohm's Law to solve circuit parameter calculations.
- Communicate effectively with customers to determine causes of problems and possible solutions.

Hazardous Materials Management Technician

- Understand differences between organic and inorganic chemicals in density and flammability.
- Use computer spreadsheet programs to graph and analyze data.
- Understand forms of radiation: alpha, beta, x-ray, and gamma.

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Textiles Worker

- Understand principles of physics and structural design.
- Understand advanced principles of electricity.
- Understand thermodynamics and hydrodynamics.

Skill Standards Projects

Educators and business leaders are collaborating at the national and state levels to develop and support industry skill standards. In many cases, business is providing the key leadership to bring a wide variety of stakeholders to the table. States are integrating skill standards into existing state programs and curriculum, successfully connecting workplace and academic learning. The following descriptions of national and state efforts are just a sample of the many ongoing efforts to facilitate key communication between the business and education communities.

National Voluntary Projects

In 1993, the Departments of Labor and Education funded twenty-two pilot projects to encourage the development of industry-wide skill standards. The Departments designed the projects to develop voluntary partnerships of key stakeholders and to investigate standards development, assessment, and implementation for specific industries. The skill standards will serve as criteria to certify workers in occupational areas, creating portable credentials that are meaningful to employers. The projects are intended to meet several specific criteria, including the following:

- Take an industry perspective for voluntary standards as opposed to an occupation-based approach
- Focus on an industry of significant size in the national economy
- Develop standards that cover all non-baccalaureate degree workers
- Match federal money with industry resources

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- Involve all relevant parties — labor organizations, workers, trainers, educators, and representatives from human resource and personnel communities
- Cooperate in a loose network of other pilot project operators
- Focus on skills required to move toward "high-performance work organizations"
- Identify both work-specific and academic skills

Most projects have finished at least a preliminary identification of skills, and the rest anticipate completion of this phase by the end of 1996. Next steps will include the development of assessment measures, publicizing the standards, assisting in translation of the standards into curriculum, and continual updating of the standards.

For additional information on the National Voluntary Projects, contact:
Carolyn Lee
Program Director — Business and Education Standards Program
U.S. Department of Education
330 C Street, SW
Room 4518, Switzer Building
Washington, DC 20202
202/260-9576

Robert Litman
Deputy Administrator — Office of Policy and Research
U.S. Department of Labor
200 Constitution Avenue, NW
Room N5637
Washington, DC 20210
202/219-8660

Massachusetts School-to-Work Initiative

The Massachusetts Education Reform Act calls for curricula that reflect the knowledge needed for workplace success. Under the leadership of the MassJobs Council (MJC), a private-public partnership mandated to serve as the chief architect for all job-related education, training, and employment pro-

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grams, the act replaces the current general track high school curriculum with a course of study designed around key industry area clusters. Curricula will be composed of three key elements:

School-based Learning - Students explore career opportunities and develop career awareness at an early stage. They learn how their own interests translate into career skills and goals. Students choose a career pathway that gives added focus to general curriculum, with the ability to change paths as they become more informed.

Work-based Learning - Work experience under a planned program that exposes the student to all areas of the workplace. Staff from participating employer sites serve as mentors and assist each student in learning skills and understanding the work environment.

Connecting Activities - Connecting activities include post-program placement and services such as finding an appropriate job, continuing education, entering an additional training program, and linking students with other community services to assure a successful transition from school to work. Massachusetts' 16, private sector-led Regional Employment Boards (REBs) play a critical role in developing connecting activities that meet the specific needs of individual communities.

Statewide assessments will measure student proficiency in the 4th, 8th, and 10th grades. Schools will grant and employers will recognize a Certificate of Occupational Proficiency (COP) and a Certificate of Advanced Mastery (CAM) which demonstrate defined levels of achievement.

The program aspires to reach half of all students by the year 2000.

For additional information, contact:
John Niles
Massachusetts Office for School-to-Work Transition
101 Summer Street
Boston, MA 02110
617/451-5130

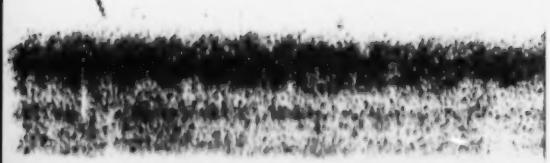
Skill Standards in Connecticut

The State Department of Education contracted with the Connecticut Business and Industry Association (CBIA), Connecticut's largest business association with over 10,000 member companies, to develop industry standards for entry-level jobs in eight industry clusters. Their work culminated in a series of booklets released in November 1995 defining skills standards for various job categories anticipated to be in high demand over the next five years. The booklets define required skills in three areas: academic knowledge and skills, technical knowledge and skills, and employability traits. Most of the information concentrates on jobs that require high school diplomas or associate's degrees, but some information is included on jobs that require a four-year degree or beyond.

To identify and develop the skill standards, the CBIA convened skill committees, led by industry representatives for each of the eight clusters. The goal of each skill committee was to determine job categories within each cluster that require a high school or two-year associate's degree and to outline the academic, technical, and employability skills necessary to perform competently in those job categories. CBIA validated the proposed skill standards through a large mailing to CBIA members and non-members and held a focus group to obtain additional input. The occupational areas outlined include: arts and media; business and finance; construction technologies and design; environment, natural resources, and agriculture; government, education, and human services; health and biosciences; retail, tourism, recreation, and self employment; and manufacturing, communications, and repair.

The CBIA found several themes to be common across committees:

- All students must be proficient in computers since the spread of technology is pervasive.
- The movement toward Total Quality Management, in which the locus of decision making shifts from bureaucratic, hierarchical structures to flattened, decentralized decision making, is common to all areas.
- Almost all "high-performance" companies required advanced skills such as applied mathematics for problem solving.



- No entry level job is a dead-end job if it teaches young people employability skills and provides work experience they can build on in the future.

For additional information, contact:
Lauren Weisberg Kaufman
Connecticut Business and Industry Association
370 Asylum Street
Hartford, CT 06103-2022
203/244-1900

Illinois Occupational Skill Standards and Credentialing Council

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC), an appointed council of nine business, industry, and labor representatives, is charged with establishing state-wide occupational skill standards and credentialing systems for Illinois in cooperation with state workforce preparation agencies. IOSSCC has three specific functions:

- To recognize and develop skill standards and credentialing systems
- To market and promote the application of these systems in the private sector
- To work with state councils and agencies to promote the application of standards and credentials in the publicly funded and regulated workforce development system

The IOSSCC is organized into industry-based subcouncils, each of which includes representatives from major employers and organizations in its industry. The subcouncils determine which occupations to include in the skill standards system and establish standards development committees to develop the standards. Committees include business, labor, and education representatives.

IOSSCC's vision is to develop a statewide system of industry-defined and recognized skill standards and credentials for all major skilled occupations that provide strong employment and earnings opportunities. The IOSSCC will work closely with the Illinois State Board of Education to enroll people in pro-

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grams that can help them meet industry-defined standards, obtain portable industry-recognized credentials, and enter or maintain employment in IOSS-CC-recognized occupations.

For additional information, contact:
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V. Other Efforts to Bridge the Gap

A number of other organizations have stepped in to improve the connections between schools and employers by designing tools to facilitate communication. These tools reinforce and complement academic and skill standards.

O*NET

O*NET (Occupational Information Network) will be a comprehensive database that identifies and describes work content, worker skills, and training requirements for jobs across the country in all sectors of the economy. O*NET will replace the outdated *Dictionary of Occupational Titles* (DOT) as the nation's primary source of occupational information. Sponsored by the Department of Labor's Division of Skills Assessment and Analysis, the O*NET prototype will be a timely, easy-to-use resource that helps employers, workers, educators, and students make informed decisions about education, training, careers, and work.

O*NET will provide the database infrastructure for users to do the following:

- Access a skill-based framework (O*NET Content Model) for describing knowledge, skills, and abilities across all industries and occupations
- Use a common language for the description of skills, knowledge, abilities, interests, and work content
- Create lists of job skill requirements
- Be up-to-date on the latest occupational information gathered from ongoing inputs of timely data
- Have easy and quick access to occupational data through the latest electronic means, such as the Internet
- Link to other databases from Bureau of Labor Statistics, NOICC, Department of Education, OPM, etc.

During the next stage of development, O*NET's existing foundation will be supplemented with applications that enhance central functions, allowing

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users involved in School-to-Work initiatives, One-Stop Centers, community college training programs, private companies promoting career services, etc., to apply O*NET's structure and information to their particular needs. Completion of the full O*NET system is scheduled for 1999.

For additional information, contact:
Marilyn Silver
Aguirre International
*Project Director, O*NET*
Division of Skills Assessment and Analysis
DOL Office of Policy and Research
200 Constitution Avenue, NW, MS N5637
Washington, DC 20210
202/219-7161 ext. 110
Internet: ONET@doleta.gov

V-TECS

States are collaborating their efforts to facilitate communication between school and work through the Vocational-Technical Education Consortium of States (V-TECS). V-TECS outlines industry-validated, competency-based vocational technical performance standards, curriculum resources, and assessment vehicles. V-TECS members include 24 states, all four U.S. military branches, the U.S. Bureau of Prisons and the U.S. Department of Labor. V-TECS promotes the systematic development and implementation of competency-based vocational technical education through:

- Analysis of jobs and organization of occupationally related information
- Development of vehicles for assessing student and worker achievement or competence
- Design, development, and identification of instructional materials that link education/training and employment

V-TECS products and services include the following:

- **Occupational Analysis Data** analyzes specific jobs according to task lists, performance objectives/standards, enabling competencies, and related academic skills

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- **Criterion-Referenced Test Item Banks** assess student mastery of specific duties and tasks
- **Instructional Elements** include learning activities and materials
- **V-TECS DIRECT** stores and retrieves V-TECS products; users can edit or customize existing material or create their own
- **V-TECS Personnel** customize V-TECS products to specific users

For additional information, contact:
Ron McCage
Executive Director
Vocational-Technical Education Consortium of States
Southern Association of Colleges and Schools
1866 Southern Lane
Decatur, GA 30033
800/248-7701 ext. 543

The VITAL LINK

The Education Task Force of the American Business Conference (ABC) established The VITAL LINK (TVL) in 1990 at three national demonstration sites to relate high school students' education with the needs of future employers. TVL brings educators, members of the business community, and students together in collaborative efforts, addressing the needs of their immediate communities. TVL motivates students by linking high scholastic achievement with real business skills and other related business needs. Success is measured through positive changes in student achievement and successful transitions into the business community.

The VITAL LINK calls for business, in cooperation with educators, to do the following:

- Articulate standards of employment
- Establish entry-level "admissions criteria" for jobs that distinguish between time spent in school and achievement levels

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- Develop a portfolio of student records and achievement which is highly accessible to employers
- Apply rewards and incentives based on merit

The VITAL LINK demonstration sites were established in New Jersey; Fort Worth, Texas; and Orange County, California.

TVL Orange County is completing development of the Employability Transcript, a record of student achievements which will be readily available to potential employers through a database managed by the Orange County Department of Education. Employability transcripts will highlight a variety of student information, including career skills such as problem solving, group participation, computer applications, coursework achievement, and special certificates or workplace-related activities. TVL Orange County also promotes activities including internships, workshops, tutoring, mentorships, and job fairs.

TVL Fort Worth, a component of C³ (Classrooms, Corporations, and Community), is developing an extensive internship program for teachers and students. One such program occurred in the summer of 1991, when unprecedented cooperation between the Fort Worth Independent School District and the health care industry permitted 40 middle school students and 20 middle school teachers to participate in one-on-one mentoring with Fort Worth health care professionals. TVLFW's five-year goal is to provide 5,000 twelve year olds with real life learning experiences in the workplace.

For additional information, contact:
Mary Lou McDonald Galvin
Manager, Communications
American Business Conference
1730 K Street, NW
Suite 1200
Washington, DC 20006
202/822-9300

Worklink

Worklink, "the essential credential" developed by the Educational Testing Service (ETS), is a computer-based information system that helps students

make the transition from school to work by building a comprehensive record that showcases their accomplishments. Designed in consultation with employers, the Worklink record shows the following:

- School record summaries
- Confidential teacher ratings of students' work habits
- Work experience, extracurricular activities, certifications of achievement, and job related courses
- Assessment of traditional academic skills including math, reading, and computer skills.

Through the Worklink system, employers specify selection criteria and have matching records automatically faxed or downloaded. This close connection between school achievement and the hiring process encourages students to work hard in school, since grades are listed in personnel records. Teacher ratings also motivate students to develop positive work habits.

For additional information, contact:
Laurie Childers
Marketing Consultant
Educational Testing Service
33 S. Delaware, Suite 202
Yardley, PA 19067-1524
800/784-1464

Work Keys®

American College Testing (ACT) created Work Keys® to help improve the employability skills of the nation's workforce so the United States can remain competitive in a global economy. The Work Keys® system is built around a metric that measures individuals' workplace skills against the requirements of specific jobs. By encouraging communication through the development of a common language for employers and educators, Work Keys® facilitates instruction that enables individuals to improve skills that are valuable in the workplace.

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Work Keys® is made up of four integrated components:

- **Performance Based Assessments** - Work Keys® assesses skills and scores performance using levels of proficiency (skills include Reading for Information, Applied Mathematics, Listening, Writing, Teamwork, Locating Information, Applied Technology, and Observation).

- **Job Profiling** - Employers and Work Keys® staff identify crucial skills and the level of proficiency in those skills necessary for effective performance. Work Keys® analysts identify the Work Keys® skills related to each task and help employers determine which assessments and skill levels will indicate job proficiency.

- **Instructional Support** - Work Keys® assists schools in supplementing existing curricula to connect school and work more directly.

- **Reporting** - Each examinee receives a report indicating the skill level he or she has demonstrated on each assessment, as well as strategies for improving skills. Clients receive reports on individual examinees, including examinee interest and experience in particular jobs. Clients have the ability to add questions to gather information specific to their needs.

ACT licenses Work Keys® Service Centers at educational institutions that provide instruction in one or more Work Keys skills. Service centers offer career counseling and guidance, assistance with job searches, instructional support, training, or referral.

For additional information, contact:
Sherry Child
Program Specialist
Work Keys Client Services
ACT
P.O. Box 168
Iowa City, IA 52243-0168
800/WORKKEY (800/967-5539)

[redacted]

MegaSkills®

Across the nation, businesses are helping their employees to be actively involved in childrens' education through sponsorship of the MegaSkills® Program, created by the nonprofit Home and School Institute. The program's focus is on the educational role of all families in childrens' school success now and job success later.

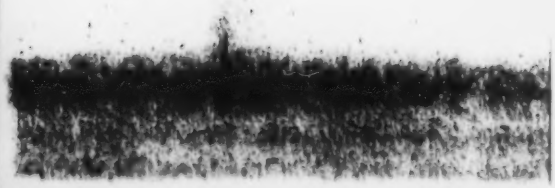
MegaSkills®, the "inner engines of learning," have been identified from school report cards and job evaluations. The MegaSkills® are Confidence, Motivation, Effort, Responsibility, Initiative, Perseverance, Caring, Teamwork, Common Sense, and Problem Solving. They form a *Never-Ending Report Card* and through specially designed activities are taught in workshops at schools and in the workplace.

MegaSkills® Programs have trained over 10,000 leaders who have conducted workshops for over 80,000 families in 48 states. The MegaSkills® Program has documented increases in test scores and decreases in discipline problems.

For additional information, contact:
Harriett Stonehill, Director
MegaSkills® Education Center
1500 Massachusetts Avenue, NW
Washington, DC 20005
202/466-3633

The Certificate of Initial Mastery

The National Center on Education and the Economy (NCEE) advocates the development of a Certificate of Initial Mastery (CIM), which would be awarded to students who master defined academic skills. This type of degree would shift academic focus from time spent in school to academic achievement. By signaling to employers that a student has mastered a set of academic skills, a CIM would reward students with improved job prospects and employers with an easier and more reliable hiring process. This system provides states and localities with flexibility while at the same time establishing nationally recognized standards to attest to a students' mastery of curriculum.



The CIM is designed to be the first step in a three-tier system. As the first tier, the CIM represents a level of general education which all students would meet regardless of future plans. The second tier represents skill standards for clusters of occupations with similar characteristics, such as those being developed by the National Skill Standards Board. The third tier represents skill standards specific to a particular job. Standards and training for this tier would be left to the discretion of individual firms, and would encompass narrowly focused skills. Several states are working with NCEE to put this system into place.

For additional information, contact:
Betsy Brown Ruzzi
Workforce Skills Program
National Center on Education and the Economy
700 Eleventh Street, NW
Suite 750
Washington, DC 20001
202/783-3668

VI. Moving Forward — The Business Role

Recognizing the important connection between academic achievement and successful workplace performance, many business leaders are taking the lead in spearheading efforts to connect school and work. At the 1996 National Education Summit, governors and CEOs committed to developing and supporting high academic standards to raise student achievement. With this goal in mind, business leaders can reinforce the connection between school and work by instituting practices that reinforce high academic achievement. Examples of these practices include the following:

- **Support high academic standards, assessment measures, and systems of accountability.** Help educators and policy makers set high academic standards, applicable to every student in every school; develop new ways to assess student and school performance against those standards; and use that information to improve schools and create real accountability, including rewards for success and consequences for failure. These three actions form the central spine of reform. Without them, all other initiatives lack strength and direction.

- **Articulate workplace skills.** Business must communicate clearly, explicitly, and regularly the skills and knowledge required to be successful in the workplace. Open communication channels will ensure that academic standards accurately reflect the changing demands of the workplace.

- **Use student achievement in hiring and location decisions.** Demonstrate that working hard and doing well in school counts. Considering academic achievement in hiring decisions will motivate students and enhance the skills of the workforce. Public support for education will rise as communities realize that high academic standards draw businesses to an area.

- **Expose educators, students, and parents to the world of work.** The best way for educators, students, and parents to understand the changing demands of the workplace is to observe these changes firsthand. After witnessing advanced academic skills applied in the workplace, community members will expect schools to expose all students to challenging academic curriculum.

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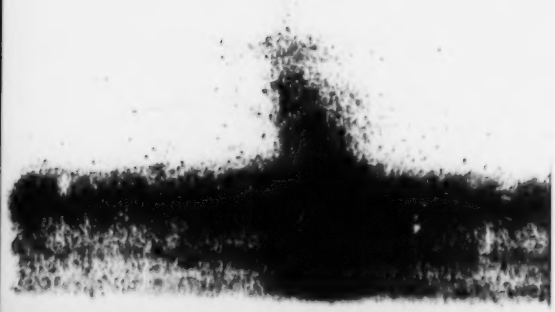
- **Adopt policies to support employee and family involvement in community schools.** Community involvement is instrumental to high student achievement and strong schools. Encourage members of your community, particularly your employees, to actively support schools and students in your area.

The business community can help bridge the gap between school and work by engaging educators, parents, and other stakeholders in developing a common language to support high academic standards. Identifying skills and knowledge needed for career success will not only motivate students, but also enable employers to use school achievement in hiring decisions. Expecting all children to meet high academic standards will ensure the skilled, motivated workforce necessary for economic competitiveness in the 21st century.



Appendix 1: National Voluntary Academic Standards Developers

Arts
Consortium of National Arts Education Associations
based at the Music Educators National Conference
1806 Robert Fulton Dr.
Reston, VA 22091
703/860-4000

Civics
Center for Civic Education
5146 Douglas Fir Rd.
Calabasas, CA 91302-1467
818/591-9321

English
International Reading Association
800 Barksdale Rd.
PO Box 8139
Newark, DE 19714-8139
302/731-1600

National Council of Teachers of English
1111 N. Kenyan Rd.
Urbana, IL 61801-1096
217/328-3870

Foreign Languages
American Council on the Teaching of Foreign Languages
Six Executive Plaza
Yonkers, NY 10701-6801
914/963-8830 or 800/627-0629

Geography
National Geographic Society
1145 17th St. NW
Washington, DC 20036-4688
202/775-6701

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Health
Association of the Advancement of Health Education
1900 Association Dr.
Reston, VA 22091
703/476-3441

History
National Center for History in the Schools
1100 Glendon Ave., Suite 927, Box 951588
Los Angeles, CA 90095-1588
310/206-6093

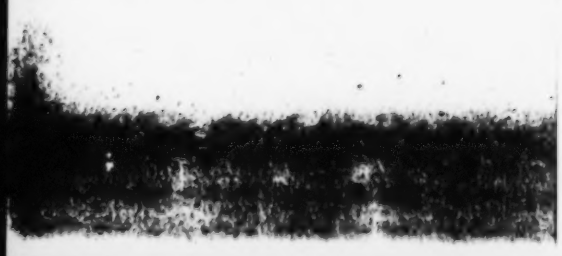
Mathematics
National Council of Teachers of Mathematics
1906 Association Dr.
Reston, VA 22091-1593
703/620-9840

Physical Education
National Association for Sports and Physical Education
1900 Association Dr.
Reston, VA 22091
703/476-3461 or 800/321-0789

Science
American Association for the Advancement of Science
1333 H St., NW
Washington, DC 20005
202/326-6666

National Academy of Sciences
2101 Constitution Ave., NW Box 285
Washington, DC 20055
800/624-6242

Social Studies
National Council for the Social Studies
3501 Newark St., NW
Washington, DC 20016
202/966-7840



Appendix 2: National Voluntary Skill Standards Projects

Advanced High-Performance Manufacturing

Technical Workers

Notes: Emphasizes the use of high-precision technologies integrated into the production process.

Contact: C.J. Shroll
Project Director
The National Coalition for
Advanced Manufacturing
1331 Pennsylvania Ave., NW
North Tower, Suite 1410
Washington, DC 20004-1703
Telephone: 202/662-8968
Fax: 202/662-8969

Agricultural Biotechnology

Agricultural Biotechnology Technician

Notes: Covers those who work in agriculture laboratories, greenhouses, and farms using the tools of biotechnology.

Contact: Jeff Moss
Project Director
National FFA Foundation
116 Sheringham
Normal, IL 61761
Telephone: 309/862-3838
Fax: 309/862-3838

Air-Conditioning, Heating, and Refrigeration

Technicians

Notes: Appropriate for both residential and commercial applications.

Contact: Victor Harville
Project Director
V-TECS
Southern Association of
Colleges and Schools
1866 Southern Lane
Decatur, GA 30033-4097
Telephone: 800/248-7701, ext. 542
Fax: 404/679-4500

Automobile, Autobody, and Medium/Heavy Truck

Entry-level Technicians
Collision Repair and Refinishing Technicians

Notes: Certification of Training Providers is also available.

Contact: Pat Lundquist
Project Director
NATEF
13505 Dulles Technology Drive
Herndon, VA 22071-3415
Telephone: 703/713-0100
Fax: 703/713-0727

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Banking

Entry-level Data/Item Processing
Loan Processing
Sales and Services Professionals

Notes: Developed regionally, these standards are currently being validated across the country.

Contact: Peter Carlavati
Director
American Institute of Banking
1120 Connecticut Avenue, NW
Washington, DC 20036
Telephone: 202/663-5382
Fax: 202/828-4544

Bioscience

Entry-level Bioscience Technical Specialist

Notes: Covers occupations in research and development, clinical and diagnostic work, and manufacturing for clinical laboratories and pharmaceutical and biotechnology companies.

Contact: Judith Leff
Project Director
Education Development Center
55 Chapel Street
Newton, MA 02158
Telephone: 617/969-7100
Fax: 617/332-4318

Chemical Process Industries

Entry-level Laboratory Technicians
Process Technical Operators

Notes: Covers a wide range of industry categories that use chemistry in value-added manufacturing processes.

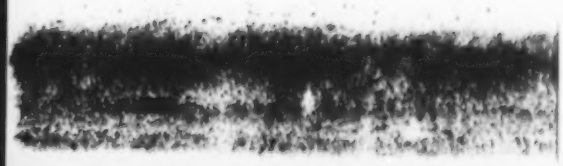
Contact: Kenneth Chapman
Project Director
American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036
Telephone: 202/872-8734
Fax: 202/872-8068

Computer-Aided Drafting and Design (CADD)

All CADD System Users

Notes: Encompasses several disciplines, including mechanical, electrical, electronic mapping, architecture, construction, and engineering.

Contact: Jane Beardsworth
Project Director
National Coalition for
Advanced Manufacturing
1331 Pennsylvania Avenue, NW
Suite 1410 North
Washington, DC 20004-1703
Telephone: 202/662-8911
Fax: 202/662-8964



Electrical Construction

Electrical Construction Worker
Electrical Line Construction Worker
Electrical Residential Construction Worker

Notes: Defined broadly to include complete training and understanding for installation of entire electrical systems.

Contact: Charles Kelly
Project Director
National Electrical Contractors Association
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814-5372
Telephone: 301/657-3110
Fax: 301/215-4500

Electronics

Manufacturing Specialist
Administrative/Information Services Support
Pre/Post Sales Representatives
Manufacturing Team Leader

Notes: The standards cover groupings of related jobs allowing maximum work flexibility in the manufacturing environment.

Contact: Cheryl Fields Tyler
Director of Workforce Quality
American Electronics Association
5201 Great America Parkway, Box 54990
Santa Clara, CA 95056
Telephone: 408/987-4200, ext. 267
Fax: 408/970-8565

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Electronics

Entry-level Electronics Technician

Notes: Covers those employed within basic and applied research, product development, manufacturing, marketing, maintenance, and repair of electronic components, devices, and systems across multiple industries.

Contact: Irwin Kaplan
Project Director
Electronic Industries Foundation
919 18th Street, NW, Suite 900
Washington, DC 20006
Telephone: 202/955-5823
Fax: 202/955-5837

Facility Management

Certified Facility Manager

Notes: Covers competencies necessary in facility management and related fields, with emphasis in eight areas including operations, project management, quality assessment, and innovation.

Contact: Ms. Lee Kovalchuk
Manager of Certification & Accreditation
International Facility Management Assn.
1 East Greenway Plaza, Suite 1100
Houston, TX 77046-0194
Telephone: 713/623-4362
Fax: 713/623-6124

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Glass

Glazier - Technician, Senior, Master
Auto Glass Installation

Notes: Covers four levels of glazier mastery, including specialization in Commercial Interior/Residential and Storefront/Curtainwall.

Contact: Linda Barnett
Director of Education & Training
National Glass Association
8200 Greensboro Drive
McLean, VA 22102
Telephone: 703/442-4890
Fax: 703/442-0630

Grocery

Customer Service/Stock Associate
Entry-level Front-end Associates

Notes: Covers self-distributing and non-self-distributing chain stores and independently owned wholesale companies.

Contact: Debbie Kennedy
Project Director
National Grocers Association
1825 Samuel Morse Drive
Reston, VA 22090
Telephone: 703/437-5300
Fax:703/437-7768

Hazardous Materials Management Technology

Entry-level Hazardous Materials Management Technician

Notes: Covers several job titles involving containment, clean-up, remediation, storage, transportation, and disposal of chemical, biological, and nuclear hazardous materials.

Contact: Jim Johnson
Project Director
Center for Occupational Research and Development
601 Lake Air Drive
Waco, TX 76710
Telephone: 817/772-8756
Fax: 817/772-8972

Health Care

Health Care Core
Entry-level Therapeutics and Diagnostics
Information Services
Environmental Services

Notes: Includes a core for positions across the medical industry, including specialization in four areas.

Contact: Dr. Sri Ananda
Project Director
Far West Laboratories
730 Harrison Street
San Francisco, CA 94107-1242
Telephone: 415/241-2712
Fax: 415/241-2702

Heavy Highway/Construction & Environmental Remediation

Pipe Laying
Concrete Work
Lead Remediation
Petro-Chemical Remediation

Notes: Covers work performed in construction of major infrastructure facilities and structures.

Contact: John L. Tippie
Project Director
Laborers-AGC Education and
Training Fund
P.O. Box 37, 37 Deerfield Road
Pomfret Center, CT 06259
Telephone: 203/974-0800
Fax: 203/974-1459

Home Appliance Manufacturing

Major Home Appliance Service Technician

Notes: Covers all major household appliance repair and assistance with curriculum development.

Contact: Marian Stamos
Vice President, Major Appliances
Association of Home Appliance Manufacturers
20 North Wacker Drive
Chicago, IL 60606
Telephone: 312/984-5800, Ext. 344
Fax: 312/384-5823

Hospitality and Tourism

Food Services: *Server, Host, Cashier, Busser*
Lodging: *Front Desk Associate, Reservationist, Bellstand, Concierge*

Notes: The project will cover positions in travel-related and recreational services, as well as food service and lodging.

Contact: Laura Pfalzer
Project Director
Council on Hotel, Restaurant, and Institutional Education
1200 17th Street, NW
Washington, DC 20036-3097
Telephone: 202/331-5990
Fax: 202/785-2511

Human Services

Entry-level Human Service Occupations: *Case Managers, Job Coaches, Residential Support Staff*

Notes: For workers who provide direct help to those with extraordinary support needs within a community setting.

Contact: Marianne Taylor
Project Director
Human Services Research Institute
2335 Massachusetts Avenue
Cambridge, MA 02104
Telephone: 617/876-0426
Fax: 617/492-7401

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Industrial Laundry

Production Workers
Maintenance Technicians

Notes: Project has developed an assessment, a two-level certification process, and structured on-the-job training aids for performance and safety improvement.

Contact: Dale Gaddy
Uniform & Textile Service Association
1300 North 17th Street, Suite 750
Rosslyn, VA 22209
Telephone: 703/247-2600
Fax: 703/841-4750

Metalworking

Machining: Levels 1,2,3
Metalstamping: Levels 2,3
Roll Forming: Level 2
Metal Spinning: Level 2
Machine Building: Levels 2,3
Screw Machining: Levels 2,3
Press Brake Operator: Levels 2,3

Notes: Machining Level 1 forms the basis for skill advancement and specialization in the other areas.

Contact: Robert W. Sherman
Interim Executive Director
National Institute for Metalworking Skills
9300 Livingston Road
Ft. Washington, MD 20744
Telephone: 301/248-6200
Fax: 301/248-7104

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Photonics

Photonics Technicians

Notes: A light/energy-based technology critical to several areas, including aerospace, defense, communications, medicine, environment, energy, manufacturing, and computers.

Contact: Darrell Hull
Project Director
Center for Occupational Research and Development
601 Lake Air Drive, Waco, TX 76710
Telephone: 817/772-8756
Fax: 817/772-8972

Plastics Manufacturing

Molders
Moldmakers

Notes: Covers production-level injection molding positions for this job-specific, custom manufacturing industry.

Contact: Drew Fleming
Director, SPI Molders Division
Society of the Plastics Industry, Inc.
1275 K Street, NW, Suite 400
Washington, DC 20005
Telephone: 202/371-5246
Fax: 202/371-1022

Printing

Prepress/Imaging
Press
Binding/Finishing/Distributing

Notes: Written at the expert level, the cluster groups cover all those working in production positions.

Contact: Dr. Jack Simich
Graphic Arts Technical Foundation
4615 Forbes Avenue
Pittsburgh, PA 15213-3796
Telephone: 412/621-6941
Fax: 412/621-3049

Retail Trade

Professional Sales Associate

Notes: For high-performance sales associates across all retailing establishments.

Contact: Robert P. Hall III
Project Director
Kathryn Jo Mannes
Project Coordinator
National Retail Federation
325 Seventh Street, NW, Suite 1000
Washington, DC 20004
Telephone: 202/783-7971
Fax: 202/737-2849

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Welding

Entry-level Welder

Notes: Embeds a range of industry applications including steel, aerospace, automobile, railroad, and petrochemical.

Contact: Nelson Wall
American Welding Society
550 NW LeJeune Road
Miami, FL 33126
Telephone: 305/443-9353, ext. 211
Fax: 305/443-7559

BCER
Business Coalition for Education Reform

American Business Conference
Black Business Council
Business Higher Education Forum
The Business Roundtable
Committee for Economic Development
The Conference Board
Council on Competitiveness
Chamber of Commerce of The United States
National Alliance of Business
National Association of Manufacturers
National Association of Women Business Owners
U.S. Hispanic Chamber of Commerce

Twelve national business organizations have joined forces to form the Business Coalition for Education Reform (BCER), a unique collaborative dedicated to strengthening America's schools. By supporting and expanding business involvement in education at the national, state, and local levels, the BCER strives to increase academic achievement for all students. Three key activities are critical to reaching this goal:

- raising academic standards for all students;
- ensuring that standards reflect the academic and workplace skills needed for sustaining a growing economy; and
- helping the public understand the critical need for world-class academic standards and necessary changes needed for schools systems to deliver them.

The BCER is leveraging resources, expertise, and partnerships to help states and communities learn from one another's experiences in advancing education reform. To that end, the BCER has created a network of state and local organizations to facilitate the sharing of resources and to coordinate efforts at the national level between BCER member organizations.

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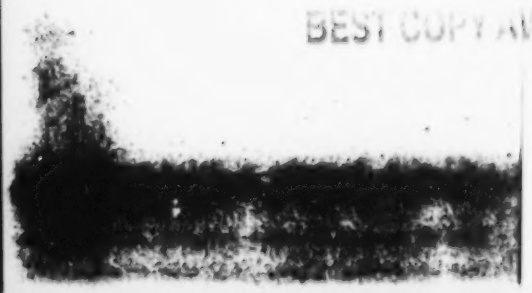

BCER
Business Coalition for Education Reform

c/o National Alliance of Business
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Suite 700
Washington, DC 20005
Phone: 800/787-2848
E-mail: info@nab.com
Internet: http://www.bcer.org